

Title (en)  
LIQUID DELIVERY DEVICE

Title (de)  
FLÜSSIGKEITSABGABEVORRICHTUNG

Title (fr)  
DISPOSITIF DE DISTRIBUTION DE LIQUIDE

Publication  
**EP 3333421 A4 20190116 (EN)**

Application  
**EP 15909727 A 20151201**

Priority  
JP 2015083705 W 20151201

Abstract (en)  
[origin: EP3333421A1] A liquid feeding apparatus has a primary side pump and a secondary side pump, and an outlet part of the primary side pump and an inlet part of the secondary side pump are connected to each other via a check valve. A temporary side pump pressure sensor for detecting the pressure inside the pump chamber of the primary side pump and a secondary side pressure sensor for detecting the pressure inside the pump chamber of the secondary side pump are provided. The signal of the primary side pressure sensor and the signal of the secondary side pressure sensor are acquired after the suction operation of the primary side pump is terminated and before the discharge operation of the secondary side pump is terminated, a preloading operation of driving the primary side pump to the discharge side is executed, until the pressure inside the pump chamber of the primary side pump becomes substantially equal to the pressure inside the pump chamber of the secondary side pump, on the basis of the acquired signal. The time allocated to the preloading operation is determined on the basis of a preset feeding flow rate, and when the preloading time is determined by the preloading time determining unit, the acquisition frequency is determined on the basis of the acquisition frequency data prepared in advance.

IPC 8 full level  
**F04B 1/02** (2006.01); **B01D 15/14** (2006.01); **F04B 11/00** (2006.01); **F04B 13/00** (2006.01); **F04B 23/06** (2006.01); **F04B 49/06** (2006.01); **G01N 30/36** (2006.01)

CPC (source: EP US)  
**F04B 1/02** (2013.01 - EP); **F04B 11/0058** (2013.01 - US); **F04B 11/0075** (2013.01 - EP US); **F04B 13/00** (2013.01 - EP); **F04B 23/06** (2013.01 - EP); **F04B 49/065** (2013.01 - EP US); **F04B 49/20** (2013.01 - US); **G01N 30/36** (2013.01 - EP); **F04B 1/02** (2013.01 - US); **F04B 13/00** (2013.01 - US); **F04B 17/03** (2013.01 - US); **F04B 23/06** (2013.01 - US); **G01N 30/36** (2013.01 - US); **G01N 2030/326** (2013.01 - EP US)

Citation (search report)

- [A] US 2013104631 A1 20130502 - TOKUO KENICHIRO [JP], et al
- [AD] US 5637208 A 19970610 - DOURDEVILLE THEODORE A [US]
- See references of WO 2017094097A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3333421 A1 20180613**; **EP 3333421 A4 20190116**; **EP 3333421 B1 20191113**; CN 108026908 A 20180511; CN 108026908 B 20190628; JP 6439881 B2 20181219; JP WO2017094097 A1 20180517; US 10514028 B2 20191224; US 2018245581 A1 20180830; WO 2017094097 A1 20170608

DOCDB simple family (application)  
**EP 15909727 A 20151201**; CN 201580082892 A 20151201; JP 2015083705 W 20151201; JP 2017553515 A 20151201; US 201515756746 A 20151201